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Physicians' Practice Follow-up Survey

ANALYSIS PLAN

TASK 8

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*all this is \$120K*1.0 INTRODUCTION

The 1983 Physicians' Practice Costs and Income Survey (PPCIS), conducted by NORC, provides a rich database with which to analyze the impact of selected health policy changes on physicians' practice patterns. Five policy-relevant research areas have been identified for follow-up inquiries:

- changes in physicians' employment arrangements from 1983 to 1986;
- changes in malpractice insurance premiums and liability limits from 1983 to 1986;
- trends in Medicare participation rates, as well as physicians' reasons for signing or not signing the participation agreement;
- the time and complexity involved in performing selected high-volume Medicare procedures and services; and *specialty specific complexity adjusted times*
- surgeons' billing practices for preoperative and postoperative office visits for selected high-volume Medicare surgical procedures.

The 1986 Follow-up Survey is funded jointly by the Office of the Assistant Secretary for Planning and Evaluation (ASPE) and the Health Care Financing Administration (HCFA), both in the U.S. Department of Health and Human Services. The five research areas listed above support ASPE's and HCFA's short-run health policy agenda.

Health Economics Research, Inc. (HER) served as subcontractor for preliminary data analysis on the 1983 PPCIS, and will continue in that capacity on the Follow-up Survey. The purpose of this report is to describe HER's analytic approach for each of the five research areas listed above. We begin with an overview of the survey methods in Section 2.0, followed by a statement of the problem and analysis plan for four of the research areas (Sections 3.0 through 6.0).*

The research results will be presented in a final analytic report to be submitted at the end of the project period. (Of course preliminary results and a draft final report will be submitted in the interim, for comments and

*The analysis plan for the fifth research area, surgeons' billing practices, is not included, pending written notification that the expanded scope of analysis has been approved by the Government Contracting Officer.

revisions.) The final analytic report will contain an executive summary that presents an overview of findings from the Follow-up Survey. However, our intent is to prepare freestanding "chapters" on malpractice insurance, Medicare participation, time and complexity of procedures, and surgical billing practices, to facilitate appropriate dissemination of results on these separate (albeit related) health policy issues.

2.0 METHODS

2.1 Overview of Sample

The 1983 Physicians' Practice Costs and Income Survey interviewed 4,729 non-federal, active patient care physicians in 17 specialty groups on a wide range of topics, including employment arrangements, Medicare and Medicaid participation, work effort and caseload, hospital affiliation, sources of income, practice costs (e.g., malpractice insurance), fees, involvement with alternative health plans (i.e., HMOs, IPAs, PPOs), and impact of Medicare's Prospective Payment System on physician practice. The panel of physicians participating in the 1983 survey is an ideal sample for the purposes of the 1986 Follow-up Survey, given the availability of a wealth of baseline information already obtained from these physicians as well as the presence of merged data from secondary sources (See Rosenbach, 1985).

The follow-up survey excluded physicians in four specialty groups: pediatrics (n=303), pathology (n=316), psychiatry (n=318), and "all other" specialties (n=238), except neurologists are included. Pediatricians and psychiatrists were excluded because of their minimal Medicare involvement, on average. Pathologists and "all other specialists" were excluded because the time and complexity questions are not particularly relevant to these groups. ("All other specialties" include emergency physicians, rehabilitation and physical medicine specialists, and public health physicians.) Altogether 3,554 physicians are included in the panel for the 1986 Follow-up Survey. (See Table 2-1 for sample sizes within specialty.) A response rate of 85 percent is targeted.

The final methodological report, to be prepared by NORC under Task 13, will contain a detailed description of the survey design and sampling methodology. In addition, the analytic reports will contain an overview of the survey methodology. This section focuses on two methodological considerations that are essential to HER's analytic approach: the coding of open-ended questions (Section 2.2) and the use of weights in inter- and intra-specialty analysis (Section 2.3).



TABLE 2-1

LIST OF SPECIALTY CATEGORIES INCLUDED IN FOLLOW-UP SURVEY BY AMA SPECIALTY CATEGORY

<u>Specialty</u>	<u>Specialty Code</u>	<u>AMA Specialty Category</u>	<u>Sample Size*</u>
General Practice	GP	General Practice	233
Family Practice	FP	Family Practice	466
Internal Medicine	IM	Internal Medicine Allergy Allergy and Immunology Broncho-esophagology Diabetes Endocrinology Geriatrics Hematology Infectious Diseases Immunology Neoplastic Diseases Nephrology Nutrition Oncology Pulmonary Diseases Rheumatology	642
Cardiology	CD	Cardiovascular Disease	157
Neurology	NEU	Neurology Child Neurology	49
Dermatology	DM	Dermatology	46
Gastroenterology	GE	Gastroenterology	53
General Surgery	GS	Surgery, Abdominal Surgery, General Surgery, Pediatric Surgery, Colon and Rectal Surgery, Plastics Surgery, Head and Neck	309
Orthopedic Surgery	OS	Surgery, Hand Surgery, Orthopedic	162

*The sample sizes refer to the number of physicians self-reporting each specialty. Physicians in four specialties have been excluded from the Follow-up Survey: pediatrics (n=303), psychiatry (n=318), pathology (n=316), and "all other" specialties (n=238).

TABLE 2-1 (continued)

LIST OF SPECIALTY CATEGORIES INCLUDED IN FOLLOW-UP SURVEY BY AMA SPECIALTY CATEGORY

<u>Specialty</u>	<u>Specialty Code</u>	<u>AMA Specialty Category</u>	<u>Sample Size*</u>
Ophthalmology	OPH	Ophthalmology	163
Urology	UR	Surgery, Urological	185
Obstetrics/ Gynecology	OBG	Gynecology Obstetrics and Gynecology Obstetrics	287
Cardiovascular/ Thoracic surgery	CS/TS	Surgery, Cardiovascular Surgery, Thoracic	43
Neurological surgery	NS	Surgery, Neurological	32
Ear/Nose/Throat surgery	ENT	Laryngology Surgery, Maxillofacial Otology Otorhinolaryngology Rhinology	73
Radiology	RAD	Radiology, Diagnostic Nuclear Medicine Nuclear Radiology Radiology, Pediatric Radiology Radiology, Therapeutic	326
Anesthesiology	AN	Anesthesiology	328
			3554

*The sample sizes refer to the number of physicians self-reporting each specialty. Physicians in four specialties have been excluded from the Follow-up Survey: pediatrics (n=303), psychiatry (n=318), pathology (n=316), and "all other" specialties (n=238).

2.2 Open-Ended Coding

The 1986 Follow-up Survey contains several sets of open-ended questions that will require manual coding prior to analysis. The open-ended coding will be performed by Health Economics Research, based on computer listings of verbatim responses generated by NORC.

2.2.1 Coding of Malpractice Questions

Three malpractice questions will require coding:

- Have you ever had any problems with the availability of malpractice insurance?
- Since this time last year, have you discontinued performing certain high-risk procedures because of malpractice insurance costs
- Since this time last year, have you discontinued seeing certain types of cases because of malpractice insurance costs?

Two approaches were available for collecting data on malpractice insurance availability and practice impacts. The deductive method involves specifying a priori a set of response categories while the inductive method allows the respondents complete latitude in answering an open-ended question. The advantages of the inductive method are twofold. First, obtaining physicians' verbatim responses reduces the bias inherent in forcing the respondent to adapt to a preconceived list of categories. Second, such responses are often more detailed and diverse than fixed alternative responses, providing more insight into the decision-making process of physicians. However, a tradeoff is inevitable: while an inductive approach preserves the diversity and richness of the response, some reliability in the coding process may be sacrificed.

Because these questions are being fielded for the first time, the first task will be to develop a coding scheme. The following precautions can be taken in designing a coding scheme that preserves the data's depth and reliability:

- More categories (rather than fewer) should be specified at the outset, because aggregating groups is easier than splitting them.
- Dimensions chosen for the coding scheme should be linked to theory and problem under study.
- Categories should be exhaustive so that each response is classifiable.
- Categories should be mutually exclusive.*

Once the coding scheme has been developed, we will test its validity and reliability. Two HER staff members will be trained in the use of the coding scheme. Inter-rater reliability will be assessed based on the coding of a sample of 50 open-ended responses. Face validity will be assessed by the two senior project staff members (Drs. Mitchell and Rosenbach).

2.2.2 Coding of Medicare Participation Questions

Based on their participation decisions at three points in time (October 1984, October 1985, May 1986), respondents are directed into one of five questionnaire paths: signers throughout, non-signers throughout, signers to non-signers, non-signers to signers, and "indecisive" physicians (a different decision in all three time periods). All but the "indecisive" physicians are asked to rate the importance of a series of close-ended reasons for their decision. In addition, they are asked whether there are "any other reasons that were very important in their decision." Given the unpredictable motivations of the "indecisive" physicians, no specific reasons are given; instead the responses are entirely open-ended. In addition, all physicians who changed their decision between May 1986 and January 1987 are asked what factors were very important in changing their decision.

HER gained extensive experience during the 1983 survey in designing and utilizing a coding scheme for open-ended responses concerning physicians' reasons for signing or not signing the agreement. The close-ended questions were formulated on the basis of this experience as well as substantive

*This list was adapted from Research Methods in the Social Sciences, by David Nachmias and Chava Nachmias (New York: St. Martin's Press, 1976).

background knowledge about the participation program. A preliminary examination of both pilot responses and the first 250 completed interviews suggests that many of the verbatim responses are actually elaborations of the specified reasons. Where this is found to be the case, no additional coding will be required.

Many of the "other" reasons given by both signers and non-signers echo a single theme: philosophical agreement with or opposition to the program. This dimension was intentionally omitted from the specified list but will be captured in open-ended coding. For example, some signers report, "I just thought it was the right thing to do." Some non-signers say, "I hate the government."

In a few cases, a physician may indicate that one of the specified reasons is "not important" but give an "other" reason that is very similar to the specified reason. This generally suggests that the physician did not understand the specified reason (for example, the term "balance bill" may not be familiar to the respondent). During the coding process we will assess the frequency of this problem and develop an approach that satisfies methodological and analytic considerations.

2.3 Use of Weights for Inter- and Intraspecialty Analysis

2.3.1 Rationale for Weighting*

Three basic factors necessitate the application of respondent level data weights for the 1983 PPCIS and the 1986 Follow-up. Weighting is applied to compensate for over- and under-sampling, as well as to adjust for varying levels of completion. The third factor is not compensatory; rather weighting allows analysts to easily project the survey data to the sampling universe.

Weighting to Adjust for Over- and Under-Sampling. Respondent data weights provide a method for taking into account the fact that specialty groups were differentially over- and under-sampled on the initial and follow-up studies. For example, by design the selected sample of PPCIS

*This section is adapted from the "Supporting Statement for Request for OMB Review," August 4, 1986.

contained nearly twice the number of urologists and cardiologists that would have been selected in a proportionate stratified sample design. This disproportionate allocation was used in order to assure sufficient sample sizes for analysis by specialty group. The end result of this differential sample allocation is that any analysis (from simple to complex) carried out across specialty groups may be subject to sample estimation bias unless data weights are applied.

Weighting to Adjust for Levels of Cooperation. The second reason which necessitates application of data weights is related to the fact that cooperation rates are different for physicians in different specialty groups, geographic regions and urban/rural classifications. Thus, even if we had started out on the PPCIS with a proportionate sample based on the previously mentioned criteria, the sample of completed cases would not have contained the "appropriate" proportion of physicians with respect to these criteria. Data weights correct for these disproportionate cooperation rates on both the initial and the follow-up surveys.

It is important to note that the correction for disproportionate cooperation/response rates does not take into account the possibility that cooperators/responders may be different from non-cooperators/nonresponders.

Weighting for National Projections. The third and final reason for the use of case level data weights is related to ease of use rather than bias attenuation. The data weights applied to the PPCIS sample cases have been scaled in such a way that the weighted sum for different variables will provide national projections. Comparable procedures can be applied to the follow-up survey. Thus, the weighted sample sum of physicians falling into a certain classification is directly interpretable as the projected number of physicians in the United States who fall into the classification. It should be noted, however, that this general statement assumes that no individual data values are "missing." In cases of missing data, appropriate correction factors must be applied to these sample projections. It is important not to be misled by cell sizes when using weighted data, because the numbers of cases (unweighted) may actually be quite small.

Special Adjustments for the Follow-up Study. The 1987 follow-up study will require weighting on two additional factors--current eligibility rate and response rate on the follow-up study. The weighting will follow procedures similar to those used in the 1983 PPCIS. More specifically, the size of the target population will be reduced by the eligibility factors (e.g., retirement, out-of-scope specialty) found in the initial contact attempts on the follow-up study. Secondly, inverse ratio adjustment procedures will be used to compensate for differential non-response factors. It is anticipated that this adjustment will involve cell collapsing and pooling in order to place upper limits on the coefficient of variation of the adjustment weights.

2.3.2 Proposed Analytic Approach

Due to cost considerations and ease of interpretation, all exploratory work will be performed using unweighted data. This includes the preliminary examination of frequency distributions and means for the purpose of data cleaning and outlier assessment. However, all results--both intra- and interspecialty comparisons--will be presented using the respondent-level data weights computed for the follow-up survey. As discussed above, weighting compensates for the design features of the initial and follow-up surveys, that is, the disproportionate probability of selection for the 1983 survey, and differing eligibility and completion rates in both surveys.

Table 2-2 illustrates, for two specialties, the importance of intraspecialty weighting to reflect the design features of the 1983 PPCIS. Because the eligibility and completion rates varied, not just across specialty, but across region and urban/rural location as well, the cell weights within specialty varied as well. (These variations will be perpetuated in the follow-up survey.) For example, the weight for general practitioners in rural areas in the Northeast is 41.54 versus 73.94 for their colleagues in urban areas. Among general surgeons in the South, the weight ranged from 56.67 (rural) to 66.44 (urban).

TABLE 2-2

EXAMPLE OF SAMPLE CELLS AND WEIGHTS IN THE 1983 PHYSICIANS' PRACTICE COSTS AND INCOME SURVEY

<u>Cell Definition</u>		<u>Cell Weight</u>	
		<u>General Practice</u>	<u>General Surgery</u>
Northeast	Urban	73.94	68.90
	Rural	41.54	60.48
South	Urban	59.38	66.44
	Rural	56.46	56.67
North Central	Urban	53.33	63.84
	Rural	52.06	59.17
West	Urban	62.63	60.82
	Rural	48.44	57.38

Source: Adapted from Sprachman, et al., Physicians' Practice Costs and Income Survey: Final Methodological Report. Prepared under HCFA Contract No. 500-83-0025. Chicago: NORC, 1985.

3.0 PHYSICIAN PRACTICE ARRANGEMENTS, 1983-1986

3.1 Statement of the Problem

The increasing supply of physicians, together with rising practice costs and cost control pressures from third-party payors may motivate some physicians to change their practice arrangements. Some physicians may leave solo, private practice for group practice; others may leave private practice entirely and become employed by another physician, corporation, health maintenance organization (HMO), clinic, or hospital.

Data from the 1983 PPCIS show that 71 percent of physicians were self-employed, 10 percent were employed by another physician or corporation, 9 percent by a hospital, and 7 percent by a clinic or HMO. Of those who were self-employed, 58 percent were in solo practice (Sprachman and Rosenbach, 1986). These patterns vary by specialty, with surgeons most likely to be self-employed and pediatricians most often employed by clinic or HMO. Pathologists are by far the most likely to be hospital employees. Self-employed psychiatrists are predominantly in solo practice (89%) and self-employed pathologists and radiologists tend to practice in groups (83-84%).

Baseline practice data from the 1983 PPCIS together with updated information from the 1986 Follow-up Survey provide a profile of changing practice arrangements from 1983 to 1986.

3.2 Analysis Plan

In both the initial and follow-up surveys, physicians have been asked about their employment arrangement and the size of their practice (full- and part-time physicians). The initial survey provides somewhat cruder measures of practice arrangements because it forced physicians working in more than one setting (e.g., private practice and hospital employee) to choose the one setting reflecting their main practice. In the 1986 survey, physicians with more than one setting are asked to report the percent of time spent in each setting. As such, the practice setting data are not entirely comparable across the two time periods. The data on practice size, however, should be comparable because in both years the data refer to the size of the physicians' main practice.

Low priority

As a first step, descriptive information will be presented on the percent of physicians practicing in more than one setting during 1986 and the typical "combined" arrangements (e.g., 50% hospital-based and 50% private practice). Next, we will compute the average percent of time spent in each setting. This will be presented by specialty, geographic location, physician age, and sex. (These latter two variables are available from the 1983 PPCIS public use tape.) Allocating the average percent of time across settings is a more refined approach than designating the main setting. Nevertheless, to achieve comparability with the 1983 data, we will also identify the physician's main setting and then compare the main practice setting in 1983 versus 1986. Undoubtedly, the majority of physicians will not have changed main settings (at least at the aggregated level of our analysis). However, we will attempt to identify the major employment shifts that are occurring and whether certain specialties are disproportionately affected.

We will also compare average practice size between 1983 and 1986. Increasing practice costs and malpractice risk may cause existing groups to expand in an effort to spread expenses and risk across partners. In addition, we will examine whether self-employed physicians in solo practice are entering group practice (perhaps for these same reasons). These analyses will be specialty-specific because of the considerable inter-specialty variation in group versus solo practice affiliations. As noted above, psychiatrists tend to practice alone, while the practice of radiology and pathology is dominated by groups.

neither specialty mentioned in the survey

4.0 ANALYSIS OF MALPRACTICE INSURANCE COSTS

4.1 Statement of the Problem

Recent discussions concerning the problems of medical malpractice insurance have revealed a diversity of views as to what issues are of concern, what the causes of the problems are, and how they can be solved. For instance, while medical groups claim that problems of high malpractice premiums have caused physicians to move out of the profession or to different specialties (Jonas, 1986), the American Association of Trial Lawyers argues that such premiums account for only a small proportion of physician gross income (GAO, 1986b).

The United States General Accounting Office (1986a) found that the physicians they surveyed believe that malpractice insurance is too expensive. Based on data from the AMA's Socioeconomic Monitoring System, average malpractice premiums accounted for 7 percent of average total professional expenses in 1982. By 1984, this had risen to 9 percent (GAO, 1986b).

The American Medical Association (GAO, 1986b) has asserted that between 1983 and 1985 total premiums paid by over 400,000 physicians doubled. However, the GAO (1986b) determined that the size and rate of increase of premiums varied considerably by specialty and by region. For instance, by 1984 the average general/family practitioner could expect to pay \$4,600 a year in premiums, an increase of 31 percent over 1982. Surgeons could expect to pay 35 percent more than in 1982, with premiums averaging \$13,400. The highest increase was experienced by obstetrician/gynecologists, who by 1984 paid an average \$18,800 in premiums, an increase of 72 percent.

Rising malpractice premiums may be causing physicians to retire, to change to general practice, or to refuse to perform certain procedures (Sammons, 1986). For example, the American College of Obstetricians and Gynecologists (Jonas, 1986) asserts that high insurance costs are making it difficult for OB/GYNs to practice. In Florida the average premium for this specialty is \$82,000 to \$118,000 per year.

According to physician groups, the availability of insurance and the willingness of physicians to practice in certain regions and/or specialties are closely allied problems. In this vein, it has been claimed that OB/GYNs



in Virginia are unable to obtain any insurance if they wish to practice in groups of less than ten, despite the fact that the state recently passed extensive tort reforms (Jonas, 1986). One estimate suggests that almost half of the nation's OB/GYNs are ceasing or reducing their obstetric practice, and one-fourth of U.S. surgeons have discontinued performing certain procedures (Sammons, 1986).

As a result, most states have enacted tort reforms and other policy changes in recent years. A poll of 50 state hospital associations found that tort reform has become the principal policy concern facing the industry (FAHS, 1986). The FAHS Review notes, "hospitals, physicians and other providers have joined broad-based coalitions to try to turn the tide legislatively against high damage awards in the judicial system and skyrocketing insurance rates, not only in the malpractice area but the full gammit of liability coverage." According to the poll, tort reform legislation was passed in 28 states in 1986 and failed in 12 (FAHS, 1986).

The exact nature of the changes has varied according to local conditions and in response to the experiences of the states. In Virginia for instance, a major insurance company decided not to cover physicians unless they practice in hospitals or in groups of at least ten (American Medical News, 10/10/86). In response, the state legislature reactivated its joint underwriting association and accepted premiums for the excluded physicians. A different example of a response to the perceived malpractice "crisis" has been from Pennsylvania. Physicians are required by state law to have malpractice insurance sufficient to cover individual claims of up to \$1,200,000 and total claims of \$3,600,000. The first \$200,000/\$600,000 must be purchased through an insurance company, and the remainder must be obtained through the state administered catastrophic loss fund (GAO, 1986b).

Florida passed legislation in 1986, instituting a number of changes: a \$450,000 cap on non-economic damage awards, a restructuring and capping of economic damage awards, and a requirement that judges reduce judgments with respect to contributions for collateral sources in malpractice suits (FAHS, 1986). Other recent examples of reforms from around the country include:

- limiting an attorney's contingency fees and the elimination of joint and several liability in Connecticut;



- requiring that independent certification be made by doctors as to the validity of a malpractice claim before the case is taken to court in New York; and
- revising the statutes of limitations in Colorado (FAHS, 1986).

4.2 Analysis Plan

The Follow-up Survey gathers information on the level of own (that is, physician or practice) malpractice insurance payments in 1986 (or 1985 if 1986 data are not available); the amount paid by the hospital, if any; levels of liability coverage--both per case and total coverage--in 1983 and 1986; the types of problems encountered with the availability of malpractice insurance; and the impact of rising malpractice insurance costs on physician practice. As discussed in Section 2.2.1, information on malpractice availability problems and practice impacts is being gathered through open-ended questions which will be coded prior to analysis.

The 1983 PPCIS, together with the 1986 Follow-up Survey, provide the only known sources of recent information on malpractice insurance premiums paid by a panel of physicians. We will compare average malpractice premiums in 1983 versus 1986 for physicians overall and by specialty. We will be able to assess whether certain specialists, such as obstetricians/gynecologists, have faced more rapid premium increases, or whether increases have been felt across all specialties at a rather even rate.

Another measure of the impact of rising malpractice insurance costs is the relationship to gross income in 1983 versus 1986. Again, this analysis will be performed for physicians overall, and by specialty. This analysis will require careful data preparation to be sure that appropriate measures of gross income are used in the denominator. The objective is to obtain a measure reflecting gross income at the physician level. For self-employed physicians in solo practice or physicians employed by a hospital or other setting, the measure is straightforward, and the data reported in the interview should be appropriate. However, for self-employed physicians in group practice, the reporting of gross income is less straightforward. We ask this group of physicians to report the gross income for the entire medical



practice with the intent of deriving per physician figures based on practice size. Experience with the 1983 survey suggests that some physicians reported personal gross income rather than gross income for the entire practice. The 1986 Follow-up Survey attempts to correct the deficiencies found in the earlier survey, but the effect on data quality is as yet unknown. For example, when physicians are asked the gross income from the entire medical practice, the CATI system automatically calculates the gross income per physician as a crude check on whether the physician may actually be reporting his/her own gross (or net) income rather than gross income for the practice. Additionally, interviewers are instructed to verify with the respondent that the reported figures reflect practice gross rather than physician gross or net. This information should greatly assist us in deriving the denominator necessary for the analysis of 1986 malpractice premiums relative to gross income.

Because of the known problems with the 1983 data on gross income for group practice physicians, the comparison between 1983 and 1986 figures will be somewhat tentative. Several steps will be taken to maximize our confidence in the estimates. First, we will include only physicians in the same type of setting (although not necessarily the same practice) during 1983 and 1986. Second, we will control for practice arrangement, thereby comparing changes in own malpractice premiums relative to gross income for hospital employees versus HMO/clinic employees versus solo private practice physicians, and so on.

Exhibit 4-1 presents a sample table shell for this analysis of malpractice insurance premiums (absolute and relative payments) in 1983 and 1986, for all physicians, by specialty, and by practice arrangement.

In addition to malpractice payments made by the physician or the practice, the hospital may provide malpractice coverage, either through self-insurance or a hospital policy. We will examine the frequency with which hospital coverage occurs, by specialty and by practice arrangement. We will also determine whether hospital coverage is most often via self-insurance or if actual payments are made on the physician's behalf.

In a small number of cases, physicians have no malpractice insurance coverage, through either their practice or a hospital policy. The Follow-up Survey contains special probes to verify that the physician has no coverage



EXHIBIT 4-1

CHANGES IN AVERAGE OWN MALPRACTICE INSURANCE PAYMENTS,* 1983-1986: ACTUAL PAYMENTS AND PAYMENTS RELATIVE TO GROSS INCOME

Average own malpractice payments			Own malpractice payments as a percent of gross income		
1983	1986	% Change	1983	1986	% Change

All PhysiciansSpecialty

General practice
 Family practice
 Internal medicine
 Cardiology
 Other medical
 specialties
 General surgery
 Orthopedic surgery
 Ophthalmology
 Urology
 Obstetrics/gynecology
 Other surgical
 specialties
 Radiology
 Anesthesiology
 Neurology

Practice Arrangement

Employed by hospital
 Employed by HMO/clinic
 Employed by other physician/
 corporation
Self-employed
 Solo practice
 Group practice

*Own malpractice payments refer to payments made by the physician or the physician's practice. Excludes payment made by the hospital on the physician's behalf.



and asks when malpractice coverage was discontinued. Because few physicians are completely uninsured, we most likely will not be able to perform specialty-level analysis with any degree of confidence. At the very least, however, we can estimate the prevalence of uninsured physicians and ascertain whether their lack of insurance coverage is a recent phenomenon, a result of the malpractice "crisis" in the 1970s, or perhaps there is no distinct time trend.

The Follow-up Survey also gathers data on levels of liability coverage--both per case and total limits--for two time periods (1983 and 1986). This analysis has two objectives: first, to identify the most common levels of coverage; and second, to determine whether coverage has increased, decreased, or stayed the same from 1983 to 1986.

In our analysis of levels of coverage, we will look at per case and total liability limits separately and together. Summary tables on common levels of coverage will be prepared for physicians overall and by specialty. For ease of analysis, some aggregation of policy limits may be necessary where there are few physicians with such coverage. We know from the survey pretest that certain coverage limits are quite common, such as \$200,000/\$600,000 or \$1,000,000/\$3,000,000. Others may be quite rare in our sample and may be combined for the sake of parsimony in our tables and discussion.

Comparisons between 1983 and 1986 coverage limits will be quite critical in our understanding of the impact of rising malpractice costs. Physicians may decrease the level of coverage in an effort to reduce the amount spent on malpractice insurance. On the other hand, a perceived (or real) threat of frivolous negligence suits may cause some physicians (notably surgeons) to increase their coverage limits.

The Follow-up Survey also gathers data on whether physicians have experienced any problems with the availability of malpractice insurance. We will distinguish between availability problems pertaining to the cost of coverage versus those related to the presence or absence of carriers who are willing to write policies in their state. The extent to which this analyses can be performed by specialty will depend on the prevalence of problems within and across specialties. An alternative to specialty-level analyses is a more aggregated specialty designation (GP/FP, Medical, Surgical, Other). At a



minimum, we will document the frequency and nature of availability problems faced by physicians, regardless of specialty. (Preliminary evidence suggests that the problem may not be specialty-specific, but rather state-specific.)

Finally, we will present information on the impact of rising malpractice insurance costs on two aspects of physician practice--discontinuation of certain procedures or of certain types of cases. Again, we will determine whether specialty-level analysis (or the more aggregated specialty designation) is possible based on the frequency of reported problems.



5.0 ANALYSIS OF MEDICARE PARTICIPATION

5.1 Statement of the Problem

The Deficit Reduction Act of 1984 (DEFRA) created a Participating Physicians' Program under Part B of Medicare. Physicians who signed the Participation Agreement would accept 100 percent of Medicare cases on assignment. Those who chose not to participate would still be able to decide on a case-by-case basis whether to accept the assigned amount from Medicare (as payment in full), or whether to bill patients directly for their actual fee. The major incentive for participating was an update in the charge profile for participants, but not for non-participants, at the end of the fee freeze.

The initial participation period was for the fiscal year beginning October 1, 1984. Congress extended the participation program and the fee freeze, instituting a second sign-up period for the fiscal year beginning October 1, 1985. When the freeze on prevailing charges for participating physicians was lifted, a third participation decision was made as of May 1, 1986. Finally, under the Omnibus Budget Reconciliation Act of 1986 (OBRA) a fourth decision period was provided. Based on a complex array of participation incentives included under OBRA, physicians must decide by January, 1987 whether or not to sign the Participation Agreement.

First, the update in the prevailing charge levels for non-participants will be only 96 percent of the prevailing charge for participants. Second, non-participants are limited in their actual charge levels (known as the maximum allowable actual charge), based on a formula that compares the lower of (1) the physicians' 1984 base-period charge or (2) the 1986 average actual charge, to the 1987 prevailing charge for non-participating physicians. The actual charge limits are calculated for each procedure or service the physician performs. Beginning October 1, 1987, nonparticipants must notify beneficiaries of the estimated actual charge for elective surgery of \$500 or more; the estimated approved charge; the amount by which the actual charge exceeds the approved charge; and the amount of coinsurance. This provision is designed to provide the beneficiary with sufficient information on potential liability for elective surgical procedures.



Other participation incentives include prompter payment of participants' claims; listing in a directory of participating physicians; notices about the participation program to beneficiaries submitting unassigned claims; requirement of hospital officials to inform patients of physician participation status when making hospital referrals and to identify a participating physician, where possible; toll-free telephone lines maintained by the carriers to provide names of participating physicians; and emblems of participation to display in the physician's office.

The 1983 PPCIS and the 1986 Follow-up Survey together provide a unique opportunity for evaluating the physicians' participation decision. A panel of about 3,500 physicians is asked about their decision at all four sign-up points as well as their reasons for signing or not signing the Participation Agreement at all points. The initial survey, conducted from October 1984 through June 1985, asked physicians about their decision in October 1984 and the primary reason for the decision. Analysts at Health Economics Research, Inc. recoded the open-ended responses into meaningful analytic categories. In the Follow-up Survey, the same physicians are asked about their decisions in the three subsequent periods, including the reasons behind the decisions. Based on responses to the 1984-85 survey (and taking into account program changes enacted by Congress), we developed a close-ended list of reasons for signing or not signing the Agreement. Physicians are asked to rate the importance of each reason. Separate lists were developed for each decision pattern in the first three periods, that is, signers throughout, non-signers throughout, signers to non-signers, and non-signers to signers. Nevertheless, open-ended (verbatim) reasons are being solicited in several instances. Physicians are asked whether any other reasons (in addition to the specific list) had a major influence on their decision. Also, those who changed their decision in each period (e.g., signer/non-signer/signer) were asked an open-ended question about their decision process. Finally, those who changed from May 1986 to January 1987 are also asked an open-ended question about their reason(s).



5.2 Analysis Plan

The first task in the analysis of Medicare participation is to calculate participation rates for each of the four decision points (October 1984 and 1985, May 1986 and January 1987). These will be presented for physicians overall, by specialty, and by practice arrangement. Then we will describe the frequency of the five decision patterns for the first three time periods. In other words we will present for physicians overall, by specialty, and by practice arrangement the percent who (1) were signers throughout, (2) non-signers throughout, (3) changed from a signer to a non-signer, (4) changed from non-signer to signer, or (5) made a different decision in each of the three time periods (the "indecisive" physician).

Next, we will examine the importance of the specified reasons in motivating physicians to sign or not to sign (or to change their decision). Some comparisons can be made across groups. For example, were colleagues very important in the decision not to sign, but less so in the decision to sign? As another example, were physicians who changed from non-signers to signers more likely to sign in order to obtain the differential payment after the fee freeze than those who signed initially? To the extent that sample sizes permit, we will analyze the specified reasons by specialty. It is anticipated that the number of physicians who changed their decision will be relatively small and not amenable to specialty-level analysis.

In addition to the specified reasons, we will describe the other reasons that physicians said were very important in their decision. The coding process for these verbatim responses is discussed in section 2.1.2. The verbatim reasons for the "indecisive" physicians are of particular importance in attempting to understand the rationale for this unexpected decision pattern.

With the new incentives and penalties enacted under the Omnibus Budget Reconciliation Act of 1986, the decision in January 1987 is of special interest. In addition to presenting simple participation rates by specialty and practice arrangement, we will show the relationship between the January 1987 decision and the previous decisions through the following simple table:



<u>January 1987 Decision</u>		
	Percent	Percent
<u>Previous decisions</u>	<u>Signers</u>	<u>Non-signers</u>
Signer throughout		
Non-signer throughout		
Signer to non-signer		
Non-signer to signer		
Indecisive		

For those who changed their decision between May 1986 and January 1987, verbatim reasons have been elicited. These will be coded prior to analysis. We hope to gain insight into the features of the new program that motivated physicians' decisions.

In both the initial and the follow-up surveys, physicians were asked to estimate the size of their Medicare patient load relative to the total caseload. The 1983 and 1986 estimates may not be entirely comparable due to methodological differences in questionnaire design. In the initial survey, physicians were asked to allocate their entire patient load by primary payor (e.g., Medicaid, Medicare, Blue Cross/Blue Shield) and the total should reconcile to 100 percent. In 1986, physicians were asked only about their Medicare caseload with no opportunity to reconcile over- or underestimates. As a first approximation of the impact of the participation decision on Medicare caseloads, physicians who signed in order to increase their Medicare patient load (including those who changed from non-signers to signers) were asked whether their caseloads increased, decreased, or stayed the same. These data will be presented for physicians overall, and if sample sizes permit, by specialty. We will explore whether physicians' estimates of their relative Medicare caseloads in the 1983 and 1986 surveys reflect their response to this question. If so, data on relative Medicare caseloads can be used to investigate the extent of increase or decrease.

Non-signers (including those who changed from signers to non-signers) were asked what percent of their current Medicare caseload is accepted on assignment. These data will be presented by decision status, by specialty, and by practice arrangement. In addition, 1983 and 1986 assignment rates can



be compared on these same dimensions to determine, at a very gross level, the direction and magnitude of changes in assignment rates since the participation program was introduced.

The de facto participants are a special class of non-signers. These physicians accept 100 percent of their Medicare cases on assignment, yet decided not to sign the Participation Agreement. We will determine how frequently this occurs (i.e., as a percent of all physicians and percent of non-signers), what reasons (both specified and verbatim) motivated their decision not to sign, the average size of their Medicare caseload (relative to the total), their distribution by specialty (again, if sample sizes permit), and whether they continued not to sign in January 1987.

Shannon would like to see the trace on the linkages
explored
how coherent are the activities - consistency

2) Across everybody - says LRA

3) Also explain your reasoning on station

6.0 ANALYSIS OF TIME AND COMPLEXITY OF PROCEDURES

6.1 Statement of the Problem

Critics have long argued that the current Medicare method of physician reimbursement "overpays" certain surgical procedures (CBO, 1986; OTA, 1986). Frequently cited examples are coronary artery bypass graft (CABG) surgery and lens procedures, procedures for which technological improvements are believed to have greatly reduced the time and effort required by physicians. The "customary, prevailing, and reasonable" (CPR) method used to set payment levels provides no mechanism for readjusting physician reimbursement rates to reflect changes in production costs. Moreover, the CPR approach assumes that the initially set rates were equitable, an assumption that increasingly is being called into question. Based on these concerns, HHS has begun to examine the "inherent reasonableness" of what Medicare is currently paying for certain high volume surgical procedures. As part of the Omnibus Budget Reconciliation Act of 1986, furthermore, Congress has reduced the prevailing charges for cataract surgery by 10 percent in 1987 (and by an additional 2 percent in 1988).

Procedures may be "overpriced" for a number of different reasons, and proposed policies to reduce payment levels must be sensitive to the factors which have produced inappropriately high charges. First, as mentioned above, the introduction of new equipment or longer experience with a new technology may serve to lower the physician time and effort necessary to perform a procedure. CABG surgery is a frequently cited example. The procedure itself is simpler, faster, and less risky than when surgeons first began performing (and billing Medicare for) this operation. In addition, much of the pre- and post-operative care, and diagnostic testing, formerly provided by the cardiac surgeon, has been delegated to other physicians who bill separately for it (Roe, 1981).

Second, certain procedures particularly newer ones, appear to be paid at disproportionately high levels when compared with similar surgery performed by the same specialty. CABG surgery involving three arteries, for example, is only marginally more complex and longer to perform compared with mitral valve replacement, but is reimbursed at a rate one-third higher (Mitchell et al.,



1986). Similarly, the insertion of an intraocular lens at the time of cataract extraction is reliably estimated to add only 5 minutes to total operating room time, but increases reimbursement by 50 percent or more (Mitchell et al., 1986).

Third, some procedures may be overpriced in certain geographic areas, relative to others. Geographic differences in fee levels may be due to reasonable charge locality (where this does not coincide with market area) or to specialty mix (but only in those instances where more than one specialty routinely performed a procedure, like colonoscopy). The variations may also be due to differences in the service mix encompassed within a global fee. Although routine post-operative care is generally included in the surgical fee, there may be large differences in the time period of follow-up and the actual number of visits provided.

Finally, surgical fees may vary as a function of what other surgeons (if any) are involved in the operation. In this case, simple comparisons of fees for individual surgery codes may misstate the extent of variation (in either direction). Low surgical fees, for example, may be offset by a greater prevalence of bills from assistant or co-surgeons. In one Midwestern state, 12 percent of all pacemaker insertions are performed jointly by a thoracic surgeon and a cardiologist. The carrier recognizes this in their screens (but not their volume counts) and reimburses each physician a smaller amount than what a single surgeon performing the entire procedure would receive. The combined payment, however, is 50 percent greater than what the solo surgeon receives.

Data collected through the Follow-up Survey (together with secondary data on Medicare charges) will allow us to compare what Medicare pays for a wide range of procedures with the time and effort actually involved in performing them. These comparisons will provide a measure of the inherent reasonableness of the current method of paying for high-volume Medicare procedures.

6.2 Analysis Plan

Our goal in this analysis is to derive a "complexity-adjusted time weight" that would be used to compare current Medicare payment levels with payment levels that take into account the time and complexity involved in



performing the procedure. This analysis is divided into several stages to ensure the quality of the data used to compute the "complexity-adjusted time weight."

We will begin by examining the frequency with which the selected procedures are performed by each specialty. The survey gathers data in five categories: at least once a week, once a month, less than once a month but at least once in the past year, not in the past year, or never. Tables will be produced for each specialty, showing the percent of physicians performing the selected procedures at least once a week, once a month, and so on. Exhibit 6-1 illustrates such a table for general surgeons. Although one purpose of the pretest was to ascertain the appropriateness of the procedures selected for each specialty, this analytic task will further ensure the adequacy of sample sizes for within and across specialty comparisons. This is essential given that most of the analyses will exclude physicians who have not performed a procedure in the past year.

The next step in this analysis is to examine several measures of time:

- (1) procedure time, that is, the time the procedure or service actually takes to perform;
- (2) total hospital time (including pre- and post-operative times); and
- (3) total time (hospital time plus post-hospital office visits).*

Of course, measures (2) and (3) are not applicable for non-surgical procedures. Means, medians, standard deviations, and coefficients of variation** will be computed for each measure of time, across the selected procedures and services. (See Exhibit 6-2 for a sample table shell). First, all physicians performing the procedure or service in the previous year will be included in the computations. Next, we will control for the frequency with which the physician performs the procedure. Although we will be sensitive to outliers in general, we will be particularly sensitive to outliers (at either extreme) resulting from infrequent performance of a procedure. If, for

*Total time will not include the pre-hospital office visit in which the decision to operate was made, or in which a pre-admission work-up was performed.

**The coefficient of variation equals the standard deviation divided by the mean. It is a measure of dispersion around the mean.



FREQUENCY WITH WHICH SELECTED PROCEDURES ARE PERFORMED: GENERAL SURGEONS

Procedure	Percent of physicians performing procedure:				
	At least once a week	Once a month	Less than once a month but at least once in the past year	Not in the past year	Never
Initial comprehensive office visit for a new patient (CPT-4 90020)					
Initial comprehensive hospital visit (with history and examination) for a new or established patient (CPT-4 90220)					
Interpretation and report (only) for a chest X-ray with two views (CPT-4 71020)					
Permanent pacemaker insertion--dual chamber, AV sequential (CPT-4 33208)					
Inguinal hernia repair (CPT-4 49505)					
Carotid thromboendarterectomy (CPT-4 35301)					
Partial colectomy (CPT-4 44140)					
Modified radical mastectomy (CPT-4 19240)					
Cholecystectomy without common duct exploration (CPT-4 47600)					
Cholecystectomy with exploration of common duct (CPT-4 47610)					
Total abdominal hysterectomy (CPT-4 58150)					
Excision of benign lesion on trunk, arms, or legs--1.0 to 2.0 cm (CPT-4 11402)					
Excision of benign lesion on trunk, arms, or legs--3.0 to 4.0 cm (CPT-4 11404)					
Diagnostic, complex upper GI endoscopy (including esophagus, stomach, and the duodenum and/or the jejunum) (CPT-4 43235)					
Diagnostic, flexible fiberoptic sigmoidoscopy (CPT-4 45330)					
Diagnostic, fiberoptic colonoscopy, 25 cm to splenic flexure (CPT-4 45360)					
Diagnostic, fiberoptic colonoscopy, beyond the splenic flexure (CPT-4 45378)					



AVERAGE TIME INVOLVED IN PERFORMING SELECTED PROCEDURES: GENERAL SURGEONS

Procedure	Procedure time*		Hospital time**		Total Time***	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Initial comprehensive office visit for a new patient (CPT-4 90020)						
Initial comprehensive <u>hospital</u> visit (with history and examination) for a new or established patient (CPT-4 90220)						
Interpretation and report (only) for a chest X-ray with two views (CPT-4 71020)						
Permanent pacemaker insertion--dual chamber, AV sequential (CPT-4 33208)						
Inguinal hernia repair (CPT-4 49505)						
Carotid thromboendarterectomy (CPT-4 35301)						
Partial colectomy (CPT-4 44140)						
Modified radical mastectomy (CPT-4 19240)						
Cholecystectomy without common duct exploration (CPT-4 47600)						
Cholecystectomy with exploration of common duct (CPT-4 47610)						
Total abdominal hysterectomy (CPT-4 58150)						
Excision of benign lesion on trunk, arms, or legs--1.0 to 2.0 cm (CPT-4 11402)						
Excision of benign lesion on trunk, arms, or legs--3.0 to 4.0 cm (CPT-4 11404)						
Diagnostic, complex upper GI endoscopy (including esophagus, stomach, and the duodenum and/or, the jejunum) (CPT-4 43235)						
Diagnostic, flexible fiberoptic sigmoidoscopy (CPT-4 45330)						
Diagnostic, fiberoptic colonoscopy, 25 cm to splenic flexure (CPT-4 45360)						
Diagnostic, fiberoptic colonoscopy, beyond the splenic flexure (CPT-4 45378)						

*Procedure time is the time the procedure (or service) actually takes to perform.

**Hospital time includes the pre-, intra-, and post-operative times. This applies to surgical procedures only.

***Total time includes hospital time plus post-hospital office visits.



example, physicians who perform a selected procedure less than once a month (but at least once in the past year) have widely differing time estimates from those who frequently perform the procedure, a conservative approach would be to exclude the former group from the time estimates.

Where the coefficient of variation on procedure time is greater than one, we will explore further the source of such variation. One approach is to perform a multiple regression analysis, where procedure time is a function of number of years since licensure, board certification status, FMG status, percent Medicare caseload, geographic location, and frequency the procedure is performed. For procedures that are performed by more than one specialty, such as a total abdominal hysterectomy (general surgeons and OB-GYNs), we will pool the samples and control for specialty. If we find that physicians performing a procedure infrequently report significantly longer (or shorter) times, this may provide evidence of unreliable estimates. If, on the other hand, physicians with a larger Medicare caseload report longer times, this may suggest a more difficult patient population (on average), and may justify longer procedure times. only one physician

The next stage involves examining physicians rankings on the complexity of the selected procedures. Physicians were asked to consider the following factors, independent of the time it takes to perform the procedure, in ranking the relative complexity of the procedures:

- (1) the judgment required to choose the appropriate approach,
- (2) the level of technical skill required,
- (3) the degree of effort involved--both mental and physical effort, and
- (4) the amount of emotional stress incurred as a result of diagnostic uncertainty or the amount of risk.

As a preliminary step in the analysis of physicians' rankings, we will examine the extent of congruence within specialty, on the three most complex and three least complex procedures or services. In this initial phase, we will study the ordinal, not the interval, ranks. We will conduct the analysis in two stages: first, we will include all physicians regardless of whether they actually perform the procedure/service; and second, we will limit the analysis to physicians who have performed the procedure/service in the past year.



Next, we will compute the mean, median, standard deviation, and coefficient of variation for the ranks of each procedure, within specialty. We will look at ranges, as well, to identify outliers (if any).

Again, this analysis will be performed, first, with all physicians and then replicated including only those performing the service in the past year. We will ascertain the sensitivity of the ordinal and interval ranks (based on the means within specialty) under these two approaches. The average ranks will be reviewed by our consultant, William Stason, M.D., for face validity.

We will prepare tables showing several statistics (e.g., mean, median, standard deviation, and coefficient of variation) for the rankings of each procedure/service within a given specialty. A table shell illustrating such a display for general surgeons is displayed in Exhibit 6-3.

The rankings are anchored at the two extremes by the most and least complex procedures designated by the physician from the list of selected procedures. The most complex procedure is given a rank of 100 and the least complex procedure is ranked on a scale of 1 to 100 in relation to the most complex procedure. This method has two features that should be noted: (1) each physician designates his/her own anchor procedures; and (2) each physician ranks on the basis of a different range, depending on the rank chosen for the least complex procedure. These two features should not introduce any biases or inconsistencies to the analyses proposed in this research plan. Inter-specialty analyses of time and complexity of procedures are beyond the scope of this analysis. Therefore, adjustments for the implicitly different scales used by, say, general practitioners and general surgeons, are not necessary. (The most complex procedure identified by a GP is undoubtedly less complex than that selected by a GS.)

possibly long

Perhaps

** * **

After we have thoroughly examined the distributions on the time measures and complexity rankings, we will proceed to the next phase--the development of the complexity-adjusted time (CAT) weight. First, we will ascertain the relationship between procedure time and complexity rankings. Simple correlation coefficients will be generated for each procedure. Physicians were instructed to rank procedures independent of time (although fatigue is a component of complexity); it is possible, however, that the two will not be entirely independent. If we find that time and complexity are not highly correlated, we will use a simple multiplicative approach to calculate the CAT weight. If time and complexity are found to be highly correlated, we



RELATIVE COMPLEXITY OF SELECTED PROCEDURES: GENERAL SURGEONS

Procedure*	Mean	Relative Complexity		C.V.
		S.D.		
Initial comprehensive office visit for a new patient (CPT-4 90020)				
Initial comprehensive <u>hospital</u> visit (with history and examination) for a new or established patient (CPT-4 90220)				
Interpretation and report (only) for a chest X-ray with two views (CPT-4 71020)				
Permanent pacemaker insertion--dual chamber, AV sequential (CPT-4 33208)				
Inguinal hernia repair (CPT-4 49505)				
Carotid thromboendarterectomy (CPT-4 35301)				
Partial colectomy (CPT-4 44140)				
Modified radical mastectomy (CPT-4 19240)				
Cholecystectomy without common duct exploration (CPT-4 47600)				
Cholecystectomy with exploration of common duct (CPT-4 47610)				
Total abdominal hysterectomy (CPT-4 58150)				
Excision of benign lesion on trunk, arms, or legs--1.0 to 2.0 cm (CPT-4 11402)				
Excision of benign lesion on trunk, arms, or legs--3.0 to 4.0 cm (CPT-4 11404)				
Diagnostic, complex upper GI endoscopy (including esophagus, stomach, and the duodenum and/or the jejunum) (CPT-4 43235)				
Diagnostic, flexible fiberoptic sigmoidoscopy (CPT-4 45330)				
Diagnostic, fiberoptic colonoscopy, 25 cm to splenic flexure (CPT-4 45360)				
Diagnostic, fiberoptic colonoscopy, beyond the splenic flexure (CPT-4 45378)				

*The procedure list will be ordered according to relative complexity, ranked from most to least complex.



will work with our consultant, William Stason, M.D., to develop an adjustment factor that diminishes the relative contribution of complexity vis a vis time. The multiplicative approach is as follows:

$$CATWT_{is} = TIME_{is} \times COMPLEX_{is}$$

where:

$CATWT_{is}$ = CAT weight for procedure i performed by specialty s,

$TIME_{is}$ = Average hospital time reported by specialty s
for procedure i,

$COMPLEX_{is}$ = Average complexity ranking reported by specialty s
for procedure i.

The CAT weight for procedure i, performed by specialty s, is therefore the product of the average time and the average complexity (defined as RANK/100), for procedure i as reported by specialty s. Average complexity, as defined here, ranges from 0.01 to 1.00. The CAT weight is a unitless value. The following table provides several hypothetical CAT weights:

<u>Average Time (hours)</u>	<u>Average Complexity</u>	<u>CATWT</u>
0.5	0.2	0.1
0.5	0.8	0.4
1.0	0.2	0.2
1.0	0.8	0.8

In this example, two procedures each take 30 minutes to perform (on average). One is four times as complex as the other. The resulting CATWT is four times higher for the more complex procedure. As another example, one procedure takes 30 minutes and another takes one hour. The average complexity on the shorter procedure is four times higher than the longer procedure. In this case, the CAT weight is twice as high.

To produce a meaningful CAT weight, the calculations must be based on a reasonable subset of physicians. As described previously, our exploratory analysis of the times and rankings will explicitly consider the appropriate scope of the sample. Our a priori sense is that only physicians who perform a procedure at least once a month should be included in the derivation of the



averages for the CAT weight to enhance the reliability of both time and complexity components. However, we will assess whether the frequency can be decreased to once in the past year.

We will also produce a CAT weight that includes an alternate measure of time. The CAT weight specified above includes total hospital time. We will include post-hospital office visits (i.e., total time) as an alternate measure of time, reflecting a "bundled" payment approach (e.g., global surgical bill).

Once the CAT weight has been developed, we can move onto the final analytic phase, that is, the comparison of current Medicare reasonable charges to potential payments under the CAT-based approach. Medicare reasonable charges will be obtained from the BMAD Beneficiary File, which contains the universe of claims on a 5 percent sample of Medicare beneficiaries (aged and disabled). The file contains roughly 17 million claims on 15 reels of tape.

We have made some preliminary calculations using the National Hospital Discharge Survey to estimate sample sizes for low-frequency (but high-dollar) surgical procedures. We believe that the 5 percent sample on the BMAD Beneficiary File will be sufficient to produce adequate numbers of claims to calculate reliable measures of Medicare reasonable charges. The 1984 BMAD file is available in-house to HER. Because of the cost of processing the volume of data (nearly \$2,000 per computer run) it is extremely important to plan the file construction carefully. To reduce the cost of data processing, we will construct an intermediate file that contains only the claims for the procedures and services included in the Follow-up Survey. Using this more limited file, we will produce a procedure-level file containing average Medicare charges for our selected procedures. In constructing the average Medicare charges, we will distinguish specialty type, given our focus on intra-specialty payment levels. In other words, for procedures performed by more than one specialty (e.g., abdominal hysterectomies by general surgeons or OB/GYNs), separate charges will be produced.

The average charges produced from the BMAD Beneficiary File will be merged onto the analytic file containing the CAT weight. To transform reasonable charges into payments reflecting the actual (complexity-weighted) time involved, we need to select one surgical procedure to serve as the base value. Although any selection is arbitrary, we will choose a procedure that represents a stable technology. Examples might include cholecystectomy or hernia repair for general surgeons, femoral fracture with internal fixation



for orthopedic surgeons, lung lobectomy for thoracic surgeons, etc. The potential payment under a complexity-adjusted time (CAT)-based approach is then calculated for the i -th operation as:

$$CATP_i = CHG_B * \frac{CATWT_i}{CATWT_B}$$

where $CATP_i$ is the CAT-adjusted payment for the i -th operation, CHG_B is the base procedure's reasonable charge, $CATWT_i$ is the CAT weight for the i -th operation, and $CATWT_B$ is the base procedure's CAT weight. This approach assumes, of course, that reimbursement for the base procedure is reasonable given the time, skill, etc. required to perform it. However, many researchers have argued that virtually all surgical procedures are overpaid relative to nonsurgical procedures (i.e., the so-called "cognitive services"). If so, then we will underestimate the extent to which procedures are overpaid. (An alternative would be to use an office visit as the base procedure. We suggest not doing this, because one of the major criticisms of complexity rankings has been the reliability of comparisons across surgical and nonsurgical procedures.) Although our results will be conservative, we believe they will be all the more powerful, and persuasive, to policymakers.

One methodological difficulty with complexity rankings is the cross-procedure comparability of estimates provided by physicians in different specialties. Although all physicians in the survey reported estimates for office visits and chest x-rays, there was no common surgical procedure that could be used to "ground" their estimates. It is thus possible that two procedures with similar CAT weights done by different specialists are not truly equivalent. To eliminate this potential source of bias, we propose to analyze only CAT-weighted payments for individual specialties, using one of that specialty's procedures as the base.

Descriptive tables will be prepared showing (for each surgical procedure or service): (1) current Medicare reasonable charges; (2) payments reflecting the complexity-adjusted time weights; and (3) the percent change in Medicare reimbursement that would result. (See Exhibit 6-4 for an example for general surgeons.) These tables will show whether, based on the time and skill involved, payment disparities exist within closely related procedures. For example: is a four artery CABG operation overpaid relative to one involving



COMPARISONS OF CURRENT MEDICARE CHARGES AND POTENTIAL PAYMENTS UNDER COMPLEXITY-ADJUSTED TIME (CAT)
PAYMENT SYSTEM: GENERAL SURGEONS

Procedure	Medicare Reasonable Charge	CAT Weight	CAT-Based Payment	Percent Change
Inguinal hernia repair				
Initial comprehensive <u>office</u> visit for a new patient				
Initial comprehensive <u>hospital</u> visit (with history and examination) for a new or established patient				
Interpretation and report (only) for a chest X-ray with two views				
Permanent pacemaker insertion--dual chamber, AV sequential				
Carotid thromboendarterectomy				
Partial colectomy				
Modified radical mastectomy				
Cholecystectomy without common duct exploration				
Cholecystectomy with exploration of common duct				
Total abdominal hysterectomy				
Excision of benign lesion on trunk, arms, or legs--1.0 to 2.0 cm				
Excision of benign lesion on trunk, arms, or legs--3.0 to 4.0 cm				
Diagnostic, complex upper GI endoscopy (including esophagus, stomach, and the duodenum and/or the jejunum)				
Diagnostic, flexible fiberoptic sigmoidoscopy				
Diagnostic, fiberoptic colonoscopy, 25 cm to splenic flexure				
Diagnostic, fiberoptic colonoscopy, beyond the splenic flexure				



only three arteries, or is the one-stage lens procedure (cataract extraction plus IOL insertion) overpaid relative to extraction alone? Table 6-1 lists related surgical procedures (some of which result from technological changes) included in the Follow-up Survey that will be compared. In addition, for internists, general and family practitioners, we can examine the reasonableness of payment levels for cognitive services relative to diagnostic procedures, and cognitive services relative to each other (e.g., initial vs. follow-up office visits, office visits vs. hospital visits vs. consultations). Similarly, for surgeons diagnostic versus operative procedures can be compared.

In closing, we emphasize that the development of the CAT weight for the purpose of evaluating a CAT-based payment approach is an iterative process that may result in modifications and refinements unforeseen at this time. We will keep the government project officer informed of our progress and apprise the GPO of any modifications to our analysis plan.



TABLE 6-1

RELATED SURGICAL PROCEDURES INCLUDED IN THE FOLLOW-UP SURVEY

CPT-4 PROCEDURE CODE	DESCRIPTION	SPECIALTIES
11402	Excision, benign lesion; trunk, arms, legs: 1.0 to 2.0 cm	Dermatology, Plastic Surgery, General Surgery
11404	Excision, benign lesion; trunk, arms, legs: 3.0 to 4.0 cm	Dermatology, Plastic Surgery, General Surgery
11441	Excision, benign lesion; face, ears, eyelids, nose, lips: 0.5 to 1.0 cm	Dermatology, Plastic Surgery
11442	Excision, benign lesion; face, ears, eyelids, nose, lips: 1.0 to 2.0 cm	Dermatology, Plastic Surgery
11602	Excision, malignant lesion; trunk, arms, legs: 1.0 to 2.0 cm	Dermatology, Plastic Surgery
11604	Excision, malignant lesion; trunk, arms, legs: 3.0 to 4.0 cm	Dermatology, Plastic Surgery

27130	Simple hip arthroplasty	Orthopedic Surgery
27135	Secondary hip revision	Orthopedic Surgery

33207	Permanent pacemaker insertion, Single changer (ventricular)	Cardiology, Cardiovascular/ Thoracic Surgery
33208	Permanent pacemaker insertion, dual chamber (AV sequential)	Cardiology, Cardiovascular/ Thoracic Surgery

33512	Coronary artery bypass graft (CABG), 3 arteries	Cardiovascular/ Thoracic Surgery
33513	CABG, 4 arteries	Cardiovascular/ Thoracic Surgery



TABLE 6-1 (continued)

RELATED SURGICAL PROCEDURES INCLUDED IN THE FOLLOW-UP SURVEY

CPT-4 PROCEDURE CODE	DESCRIPTION	SPECIALTIES
45300	Diagnostic proctosigmoidoscopy	GP/FP, Internal Medicine, General Surgery, Gastroenterology
45330	Diagnostic sigmoidoscopy	GP/FP, Internal Medicine, Gastroenterology
45360	Colonoscopy, fiberoptic (25 cm to splenic flexure)	GP/FP, Internal Medicine, General Surgery, Gastroenterology
45378	Colonoscopy, fiberoptic, beyond splenic flexure	Gastroenterology, General Surgery

47600	Cholecystectomy without common duct exploration	General Surgery
47610	Cholecystectomy with common duct exploration	General Surgery

52000	Cystourethroscopy (separate procedure)	Urology
52005	Cystourethroscopy with ureteral catheterization	Urology
52234	Cystourethroscopy with fulguration (0.5 to 2.0 cm)	Urology

52601	Transurethral resection of the prostate (TURP)	Urology
55821	Suprapubic prostatectomy	Urology



TABLE 6-1 (continued)

RELATED SURGICAL PROCEDURES INCLUDED IN THE FOLLOW-UP SURVEY

CPT-4 PROCEDURE CODE	DESCRIPTION	SPECIALTIES
58150	Total abdominal hysterectomy	Obstetrics/ Gynecology, General Surgery
58260	Vaginal hysterectomy	Obstetrics/ Gynecology
58265	Vaginal hysterectomy with plastic repair	Obstetrics/ Gynecology

66920	Lens extraction, intracapsular	Ophthalmology
66940	Extracapsular lens extraction <u>without</u> IOL implant	Ophthalmology
66984	Extracapsular lens extraction <u>with</u> IOL implant	Ophthalmology
66985	Insert IOL subsequent to extraction	Ophthalmology

93503	Swan-Ganz catheterization	Cardiology, Cardiovascular/ Thoracic Surgery
93535	Surgical insertion of intra-aortic balloon catheterization	Cardiovascular/ Thoracic Surgery
93547	Left heart catheterization	Cardiology, Cardiovascular/ Thoracic Surgery
93549	Combined left and right heart catheterization	Cardiology, Cardiovascular/ Thoracic Surgery



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Physicians' Practice Follow-up Survey

ANALYSIS PLAN

TASK 8

ADDENDUM

June 25, 1987

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7.0 ANALYSIS OF SURGEONS' BILLING PRACTICES

7.1 Statement of the Problem

Physicians' billing practices for services associated with surgical procedures may vary across specialty, geographic location, or even by procedure (within specialty). Whether a physician's surgical bill includes the preoperative office visit in which the decision to operate is made cannot be discerned from Medicare claims data because often a single, global bill is submitted. Similarly, global bills may include a wide range in the number of postoperative office visits, but this too cannot be detected using Medicare claims data.

Information about physicians' billing practices is critical in evaluating the "inherent reasonableness" of Medicare payments to physicians for "high volume, high dollar" surgical procedures. Without such information, the interpretation of time and complexity data could be misleading. Take, for example, two surgical procedures that involve roughly the same time and complexity. One procedure, however, involves several post-hospital follow-up office visits, while the other requires little follow-up care upon discharge from the hospital. It is important to know whether the bill for the former surgical procedure includes post-hospital office visits. If so, any adjustments in the payment level must take into account the additional services included in the global fee. Thus, an analysis of the composition of the global fee for selected surgical procedures may suggest the extent to which Federal policymakers could modify payments on high volume, high dollar Medicare procedures: that is, where several post-hospital visits are included, there may be less flexibility in reducing payments.

Another critical factor is the extent to which the composition of the global surgical bill may have changed over the past five years. With the introduction of Medicare's Prospective Payment System for inpatient care in fiscal 1984, the Medicare average length of stay dropped nationally from 10.2 days in 1982 to 8.8 days in 1984, a 7.1 percent annual decrease from 1982 to 1984.* It is expected that the reduction in inpatient days has been

*Source: Office of Technology Assessment, Medicare's Prospective Payment System: Strategies for Evaluating Cost, Quality, and Medical Technology, Washington D.C.: OTA, 1985.

accompanied by reductions in inpatient physician visits, both pre- and post-operatively. Yet, payments to physicians under Part B of Medicare have not been adjusted to reflect this trend toward shorter stays, and the shift towards visits in outpatient settings.

To address these concerns, the Physicians' Practice Follow-up Survey asked general surgeons and physicians in six surgical specialties about their billing practices for 23 high volume Medicare procedures. Specifically, physicians were asked:

1. Does your global surgical bill for a/an (PROCEDURE) include the pre-hospital office visit in which the decision to operate is made?
2. How many post-hospital office visits do you typically provide for a/an (PROCEDURE)?
3. How many of these post-hospital office visits are included in your surgical bill for a (PROCEDURE)?
4. For what period of time are post-hospital office visits included in the surgical bill for a (PROCEDURE)?

To determine whether physicians typically have changed their post-hospital office visit patterns since the inception of PPS, two additional questions were asked:

5. Has the number of post-hospital office visits you provide for a/an (PROCEDURE) changed over the past five years?
 - A. IF YES TO 5: How many (visits) did you provide then?

The next section describes our plans for analyzing these data on surgical billing practices.

7.2 Analysis Plan

The analysis of billing practices for surgical procedures will be conducted in two phases. A preliminary analysis (to be conducted in September 1987) entails a comparison of the number of post-hospital office visits provided currently versus five years ago (pre-PPS). The objective of this

preliminary analysis is to respond to short-run policy concerns of ASPE/HCFA. Exhibit 7-1 displays a table shell that would show, for 23 selected procedures, the percent of physicians providing same/more/less visits in 1987 versus 1982, the average number of visits provided in these two periods, and the percent change over the five year time period. In addition to presenting mean visits, we will show distributions of the number of visits provided in the two time periods.

The second phase of analysis will examine the composition of the global bill with respect to the preoperative office visit in which the decision to operate is made as well as post-operative office visits. In general, our objective is to detect patterns in billing practices, across specialties for example, or within-specialty, across procedures. In addition, we will analyze geographic variations in global billing practices to determine whether regional or urban/rural differences exist. Exhibit 7-2 illustrates the type of information that can be presented to show inter- and intra-specialty patterns:

- percent of physicians including pre-operative visit in global bill;
- percent of physicians including any post-hospital office visits in global bill;
- average number of post-hospital office visits included in global bill; and
- average percent of total post-hospital office visits included in global bill.

In addition, we will examine the joint probability of including pre- and post-operative office visits in the global fee. Furthermore, the average number of post-hospital office visits included in the global bill will be calculated two ways: (1) including all physicians regardless of whether any visits are bundled in the surgical bills; and (2) restricted to physicians with at least one visit in the global bill.

The analysis of post-hospital office visits will have to take into account some physicians' inability to report the number of visits provided to a "typical" patient. Verbatim comments have been entered onto a separate

EXHIBIT 7-1

CHANGES IN POST-HOSPITAL OFFICE VISIT PATTERNS OVER THE PAST FIVE YEARS FOR SELECTED SURGICAL PROCEDURES

Comparison of visits typically provided 1982 vs. 1987 <u>(Percent of Physicians)</u>			<u>Average number of visits</u>		Percent Change 1982 - 1987
Same	More	Less	1982	1987	
<u>General Surgery</u>					
Cholecystectomy with common duct exploration					
Partial colectomy					
Inguinal hernia repair					
Modified radical mastectomy					
<u>Ophthalmology</u>					
Lens extraction with IOL					
Scleral buckling					
Fistualization of sclera					
Intracapsular lens extraction					
<u>Orthopedic Surgery</u>					
Simple hip arthroplasty					
Total knee replacement					
Femoral fracture with internal fixation					
Hemilaminectomy for excision of herniated disk or decompression of nerve root					

EXHIBIT 7-1 (continued)

CHANGES IN POST-HOSPITAL OFFICE VISIT PATTERNS OVER THE PAST FIVE YEARS FOR SELECTED SURGICAL PROCEDURES

Comparison of visits typically provided 1982 vs. 1987 (Percent of Physicians)			Average number of visits		Percent Change 1982 - 1987
Same	More	Less	1982	1987	
<u>Urology</u>					
Transurethral resection of the prostate					
Suprapubic prostatectomy					
<u>Obstetrics-Gynecology</u>					
Total abdominal hysterectomy					
Vaginal hysterectomy					
<u>Cardiovascular/ Thoracic Surgery</u>					
3 artery CABG					
Pacemaker insertion- dual chamber					
Aortic valve replacement					
Carotid thrombo- endarterectomy					
<u>Neurosurgery</u>					
Craniectomy or craniotomy for evacuation of hematoma					
Lumbar laminectomy for decompression of spinal cord					
Carotid thrombo- endarterectomy					

EXHIBIT 7-2

SURGICAL BILLING PRACTICES FOR SELECTED PROCEDURES

	Percent of MDs Including Pre- Operative Visit* <u>In Global Bill</u>	Percent of MDs Including any Post-hospital Office Visits <u>in Global Bill</u>	Average Number of Post-hospital Office Visits <u>In Global Bill</u>	Average percent of Total Post-hospital Office Visits <u>in Global Bill</u>
<u>General Surgery</u>				
Cholecystectomy with common duct exploration				
Partial colectomy				
Inguinal hernia repair				
Modified radical mastectomy				
<u>Ophthalmology</u>				
Lens extraction with IOL				
Scleral buckling				
Fistulization of sclera				
Intracapsular lens extraction				
<u>Orthopedic Surgery</u>				
Simple hip arthroplasty				
Total knee replacement				
Femoral fracture with internal fixation				
Hemilaminectomy for excision of herniated disk or decompression of nerve root				

*Refers to pre-operative visit in which decision to operate is made.

EXHIBIT 7-2 (continued)

SURGICAL BILLING PRACTICES FOR SELECTED PROCEDURES

	Percent of MDs Including Pre- Operative Visit* <u>In Global Bill</u>	Percent of MDs Including any Post-hospital Office Visits <u>in Global Bill</u>	Average Number of Post-hospital Office Visits <u>In Global Bill</u>	Average percent of Total Post-hospital Office Visits <u>in Global Bill</u>
<u>Urology</u>				
Transurethral resection of the prostate				
Suprapubic prostatectomy				
<u>Obstetrics-Gynecology</u>				
Total abdominal hysterectomy				
Vaginal hysterectomy				
<u>Cardiovascular/ Thoracic Surgery</u>				
3 artery CABG				
Pacemaker insertion- dual chamber				
Aortic valve replacement				
Carotid thrombo- endarterectomy				
<u>Neurosurgery</u>				
Craniectomy or craniotomy for evacuation of hematoma				
Lumbar laminectomy for decompression of spinal cord				
Carotid thrombo- endarterectomy				

file indicating the physician responded "as many as necessary" or "depends on the patient." Because we have no basis for imputing a quantitative value, we will document the frequency with which this occurs.

Another analytic issue that will be explored is the extent to which physicians who are employed by a hospital, university, clinic, HMO, other physician, or other setting are familiar with their employers' billing practices. Rates of missing data will be compared for employed versus self-employed physicians. (Experience with the data collection has shows that HMO employees in particular had difficulty with this section.) Data on surgical billing practices (as illustrated in Exhibit 7-2) will be disaggregated by employment status.

The follow-up survey also collected data on the period of time for which post-hospital office visits are included in the global bill. Here again our objective is to detect patterns within and across procedures, among specialties, and by geographic location. Because many physicians were unable or unwilling to specify a length of time for which post-hospital office visits are included in the global fee, we will take into account such responses as "as long as necessary" and "depends on the patient." We will develop a coding scheme for such remarks and classify these responses prior to analysis.

The data on surgical billing practices will be linked to time and complexity estimates to assess composition of the global fee for procedures with roughly comparable CATWTs (i.e., complexity-adjusted time weight). Initially, this portion of the analysis will be performed within-specialty only. When cross-specialty CATWTs are developed, the analysis can be extended to compare the global fee practices for comparable procedures (as measured by the CATWT) across specialty.

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